stabilizing, ~~causing~~ an anatase phase ~~to stabilize~~ in the slag ~~during the oxidation~~, causing the iron present in the slag to concentrate at the exposed surfaces of the slag particles, causing a major portion of the iron in the Fe(II) state to convert to the Fe(III) state, and causing the titanium in the Ti(III) state to be converted to the Ti(IV) state; and

reducing the oxidized slag in a reducing atmosphere from about 700°C to about 950°C for at least 5 minutes to convert a major portion of the iron in the Fe(III) state to the Fe(II) state.

2. (Original) The method of claim 1 wherein the oxidation is carried out at a temperature from about 750°C to below about 900°C.

3. (Original) The method of claim 2 wherein the oxidation is carried out at a temperature from about 800°C to about 875°C.

4. (Original) The method of any one of the claims 1 to 3 wherein more than 90% of the iron in the Fe(II) state is converted to the Fe(III) state during oxidizing of the slag.

5. (Canceled)

6. (Currently amended) A method of beneficiating titania slag to increase the TiO_2 content thereof to at least 90% by weight comprising the steps of:

sizing the titania slag to a particle size from 75 to 850 μm, wherein the titania slag is produced from beach sand ilmenite;

oxidizing the sized slag particles in an oxidizing atmosphere at a temperature from about 700°C to below about 900°C for at least 30 minutes;

stabilizing, ~~causing~~ an anatase phase ~~to stabilize~~ in the slag ~~during the oxidation~~, causing the iron present in the slag to concentrate at the exposed surfaces of the slag particles, causing a major portion of the iron in the Fe(II) state to convert to the Fe(III) state, and causing the titanium in the Ti(III) state to be converted to the TI(IV) state;

reducing the oxidized slag in a reducing atmosphere from about 700°C to about 950°C for at least 5 minutes to convert a major portion of the iron in the Fe(III) state to the Fe(II) state; and

leaching the reduced slag with acid to obtain a beneficiated slag product with an increased TiO_2 content and leach liquor containing the leached impurities.

7. (Original) The method of claim 6 wherein the leaching is conducted under pressure in excess of atmospheric pressure.

8. (Original) The method of claim 6 wherein the leaching is conducted at atmospheric pressure.

9. (Original) The method of claim 6 wherein the acid used in the leaching step is heated.

10. (Original) The method of claim 6 wherein the acid used in the leaching step comprises hydrochloric acid.

11. (Original) The method of claim 6 which includes a caustic leaching step after the acid leaching step.

12. (Original) The method of claim 6 which includes a step of calcining the beneficiated slag product.

13. (Original) The method of claim 12 wherein the beneficiated slag product is washed and dried to remove volatile by products prior to the calcining step.

14. (Canceled)

15. The method of any one of claims 6 to 13 wherein the oxidation is carried out at a temperature from about 750°C to below about 900°C.

16. (Original) The method of claim 15 wherein the oxidation is carried out at a temperature from about 800°C to about 875°C.

17. (Original) The method of any one of claims 6 to 13 wherein more than 90% of the iron in the Fe(II) state is converted to the Fe(III) state during oxidizing of the slag.

18. (Canceled)

19. (Original) A product when formed by a method of any one of the claims 1 to 3 and 6 to 13.

20. (Original) The method of claim 1 or 6 wherein substantially none of the titanium in the Ti(IV) state is converted to the Ti(III) state during reduction.

21. (Canceled).

REMARKS

Applicants propose amending claims 1 and 6 as above to comply with 35 U.S.C. § 112, first paragraph.

Applicants submit that the proposed claims as presented above are patentable over U.S. Patent No. 5,830,420 to Borowiec et al. or WO97/19199 (collectively "Borowiec") for at least the following reasons.

- Borowiec fails to teach or even suggest a method of increasing the leachability of titania slag produced from beach sand ilmenite at the claimed temperature oxidation range.